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Agenda item 4

OBJECTIVE INFORMATION ON MILITARY MATTERS

Working paper submitted by the United Kingdom of Great Britain and Northern Ireland

At the 1990 session of the United Nations Disarmament Commission the United Kingdom presented a working paper for the item "Objective information on military matters" (A/CN.10/140 of 8 May 1990). That working paper gave general views on the item for the 1990 introductory discussions. For the 1991 session, the United Kingdom now submits a further paper with a view to forming agreed specific objectives and recommendations in the Disarmament Commission for concrete further action. It believes the structure of "Objectives, principles and mechanisms" advanced by the Soviet Union in 1990 (A/CN.10/142) is a useful one to pursue and will adopt this structure here.

Objectives

To encourage openness and transparency on military matters as a confidence-building measure for arms control and disarmament;

To avert crises and reduce the risk of military conflict, whether intentional or unintentional, by heading off dangerous misperceptions on competing sides;

To increase the predictability of military activities.

Principles

Recognition that measures to promote openness and transparency in military matters shall not entail the diminishing of States' security;

READEX FICHE

Across the board equality of States' rights, including their equal right of access to information obtained under multilateral agreements;

Consistency of the volume and range of information with the objectives of the regime of openness;

Provision of information on a regular basis;

Information should be accurate and subject to agreed procedures and, if appropriate, subject to verification;

Measures to promote openness and transparency may be unilateral, bilateral or multilateral, and may use the potential of the United Nations.

Mechanisms

The existing standardized United Nations reporting system for military expenditure should be adhered to by more States and its scope could be expanded;

Another regime could be established (or the above could be expanded) to deal with the provision of data on armed forces and armaments of Member States. The breakdown of forces could be simple (as exemplified by the annexed* summary of strength of armed forces in the United Kingdom statement on defence estimates);

More consideration should be given to an international register of arms sales under United Nations auspices. Such a register, provided it was universal and non-discriminatory, would have tangible benefits. The current United Nations Study on international arms transfer is important in this context;

Mechanisms need not use the United Nations. Unilateral measures (like the United Kingdom annual statement on defence estimates) help promote openness as do appropriate bilateral steps. Multilateral regional disarmament might also be desirable.

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* Annex in English only.

Annex

EXTRACT FROM UNITED KINGDOM STATEMENT ON THE DEFENCE ESTIMATES, VOLUME 2, 1990 (PAGE 5)

	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
	£ million					
Defence budget (Supply estimates)	15,973	17,033	18,059	18,479	18,782	19,215
Defence expenditure (National Accounts definition)	16,394	17,431	18,467	18,968	19,199	19,648
Defence budget expenditure (Outturn)	15,487	17,122	17,943	18,163	18,856	19,072
of which: Personnel	5,726	5,983	6,379	6,890	7,212	7,572
Equipment	6,939	7,838	8,193	7,885	8,270	8,038
Other	2,822	3,302	3,370	3,387	3,374	3,462
Defence balance of payments: invisible transactions						
Total debits	1,254	1,453	1,548	1,734	1,733	1,830
Total credits	148	159	164	200	230	208
Net balance	-1,106	-1,293	-1,384	-1,534	-1,503	-1,622
	1984	1985	1986	1987	1988	1989
Defence visible trade: identifiable equipment						
Exports (£ million f.o.b)[1]	825	813	826	1,233	1,369	2,408
Imports (£ million c.i.f.)[1]	253	246	295	285	609	672
Manpower at April each year	Thousands					
Service						
UK Regular Forces	326	326	323	320	317	312
Locally entered	10	10	10	10	9	9
Regular reserves	198	206	212	220	230	240
Volunteer reserves	86	89	95	97	93	90
Cadet Forces	146	145	143	146	145	139
Civilian						
MOD Total	233	206	202	196	175	173
Non-industrial	114	105	104	104	99	99
Industrial	119	101	98	92	76	74
UK based	199	174	169	164	143	141
Locally engaged	33	32	32	32	32	31
	£ billion at market prices					
UK Gross Domestic Product	324.2	355.3	380.8	416.8	461.9	..
General government total expenditure [2]	147.2	157.4	161.8	168.1	177.2	..
of which:						
Defence	17.1	18.2	19.1	18.9	19.7	..
Education	17.1	17.4	19.5	21.0	22.5	..
Health	16.8	17.9	19.1	20.9	23.0	..
Defence expenditure as a percentage of Gross Domestic Product	5.3	5.1	5.0	4.5	4.3	4.0[3]

Source: United Kingdom National Accounts 1990 Edition

1. Parts of guided weapons and missiles are included from 1987, and parts of military aircraft are included from 1988. Figures for earlier years exclude the trade in "parts".
2. Including debt interest and allowance for non-trading capital consumption not allocated to specific services.
3. Provisional estimate.

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THE ROLE OF SCIENCE AND TECHNOLOGY IN THE CONTEXT OF INTERNATIONAL SECURITY, DISARMAMENT AND OTHER RELATED FIELDS

International transfer of sensitive technologies

Working paper submitted by Argentina and Brazil

1. The growing importance of science and technology in the contemporary world and the prospects for their use in weapons of mass destruction make it advisable for all nations to join efforts to ensure the use of such knowledge for the well-being of mankind.

2. To that end, the international community should provide a highly relevant contribution by establishing a set of basic rules for the international transfer of sensitive technologies. Such rules must be based on respect for the legitimate interests and concerns of both supplier and recipient States. In this way they would enjoy the broadest support from the community of nations and form, ideally, a universal commitment to cooperation towards peace and development.

3. The complexity and sensitivity of the various aspects involved in international transfers in this field - e.g. the differing perceptions of specific questions related to security and the building of technological capabilities - validate the assumption that the establishment of basic rules will not be an easy task. None the less, there are reasons that recommend an effort by the international community to meet this challenge.

4. The first one is that existing international mechanisms aimed, in one way or another, at curbing the dissemination of the use of sensitive technologies for certain military purposes have not proved sufficient to ensure international security. This has been increasingly admitted even by those

States possessing advanced technologies and that are parties to the existing mechanisms. The risks inherent in the accumulation of arsenals with the immensely destructive power made possible by technological progress cannot but give rise to concern.

5. The fact that existing mechanisms are not enough to guarantee international security is related in part to the limited character of such mechanisms, whether as a result of their restricted membership or of the sectorial scope they attempt to regulate, or both. Among the instruments and mechanisms listed below, some stipulate commitments beyond the mere regulation of transfer, but they are mentioned because of their impact on such regulation:

(a) With respect to the vast scope of goods and technologies of military or dual use: Coordinating Committee on Multilateral Export Controls (COCOM), set up in 1949;

(b) With respect to nuclear technology: guidelines of the Nuclear Suppliers Group (NSG, or "London Group"); various multilateral legal instruments, such as the Treaty for the Prohibition of Nuclear Weapons in Latin America (Tlatelolco Treaty, 1967), the treaty on the Non-Proliferation of Nuclear Weapons (NPT, 1968) and the South Pacific Nuclear Free Zone Treaty (Rarotonga Treaty, 1985); and bilateral and multilateral agreements, such as those regarding safeguards entered into with the International Atomic Energy Agency (IAEA);

(c) With respect to the air/space sphere: "Missile Technology Control Regime" (MTCR), of 1987;

(d) With respect to technologies and products which may be used in the production of chemical weapons: informal mechanisms, among which the "Australian Group" (1984) stands out, and the negotiation within the Conference on Disarmament in Geneva of a convention on the prohibition of the development, production and stockpiling of chemical weapons and on their destruction, aimed at broadening the scope of the legal regime established by the 1925 Geneva Protocol, which only prohibits the use in war of asphyxiating, poisonous or other gases, as well as of bacteriological means of warfare;

(e) With respect to biological weapons: the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, which entered into force in 1975.

6. The difficult application and doubtful effectiveness of the controls provided for in currently existing mechanisms indicate a need for rules on technological transfer for the strengthening of world security that are universal, transparent and predictable. The criteria would be intended to regulate the transfer of sensitive technology products, services and know-how, engaging the participants in a global system, through the institution of a series of measures for mutual control. It could thus be guaranteed that the use of internationally acquired sensitive technology products, services and know-how would also take place under appropriate safeguards.

7. To aim at universality, and to prove capable of generating really effective international controls, the regulation of flows of sensitive technologies cannot fail to take account of the interest and need of a large number of States in enjoying access to those technologies for peaceful purposes. It seems fair to assume that the degree of adherence by the community of nations to rules intended to curb the use of sensitive technologies in weapons of mass destruction will be in proportion to the perception that such rules do not constitute an impediment, but rather an encouragement, to the dissemination of scientific and technological knowledge for peaceful purposes. From the standpoint of many States that seek to gain access to advanced technologies, the work of the currently existing mechanisms and arrangements is flawed in many cases by unilateral or discriminatory features.

8. Another reason why basic rules on international flows of sensitive technologies should be elaborated relates to the need for procedures for making the transfers of know-how consistent with the regulation of its use. Reconciling these two goals would open up new prospects for a system of broad, consensual and effective control. As regards the dissemination of know-how, the point is not to create an obligation of transfer free of charge, but to establish equitable, balanced and operationally clear norms that would favour access by the greatest number of countries to advanced technologies under a system of safeguards which strengthens the commitment of the acquiring country to the maintenance of international peace and security, in accordance with the Charter of the United Nations.

9. Scientific and technological knowledge has become a variable of increasing importance to the process of development. This awareness is of significant importance if that set of rules is to constitute a new and effective emerging standard of cooperation. The current international situation, marked by the new East-West relations and the aftermath of the recent conflict in the Gulf, has made the time particularly ripe for a constructive and innovative initiative in the field of international transfer of those technologies.

10. In that spirit it is suggested to the Disarmament Commission, at its 1991 session, that under the item entitled "The role of science and technology in the context of international security, disarmament and other related fields", universal parameters for international relations in the field of the transfer of sensitive technologies should be established multilaterally. As a contribution to the consideration of the matter, the annex to this document provides items which, in the form of draft guidelines, could form a first step towards the elaboration of universal rules on such transfers.

11. The importance of a multilateral debate on this subject was recently pointed out by the Secretary-General, who stated, in his report at the forty-fifth session of the General Assembly on the work of the Organization:

"It is, of course, vitally important to provide developing countries unimpeded access to the benefits of science and technology. This, however, should not mean that the quantitative arms race is replaced by a qualitative one and high-technology weapons are introduced that would destabilize regional and even global security. I would suggest that the international community make a special effort to clarify the important issues involved and produce clear and fair guidelines acceptable to all. This would remove a great deal of apprehension in a large number of countries that are affected by the supply policies currently applied by exporters of technology". 1/

12. In addition, as indicated by the Under-Secretary-General for Disarmament Affairs, Mr. Yasushi Akashi, on the occasion of the seminar held in Sendai, Japan, in April 1990, on science and technology and their implications for peace and security:

"A number of criticisms have been expressed regarding the alleged ineffectiveness and inequitable character of supplier restraints on high technology with military applications in nuclear, chemical, missile or other fields. Yet there is no uniformity of views on what types of approaches might be preferable to these existing endeavours, while there is a sentiment that a more universal approach such as that in the proposed chemical weapons convention has much to commend itself to a more restrictive approach". 2/

13. The discussion of this initiative in the framework of the Disarmament Commission does not rule its future consideration in other forums which have been empowered to negotiate the relevant international instruments, nor does it rule out the possibility that the development of the initiative could lead to the need for institutional arrangements for the implementation at an operational level of such norms as might be adopted.

Notes

1/ Official Records of the General Assembly, Forty-fifth Session, Supplement No. 1 (A/45/1), p. 20.

2/ Disarmament - Topical Papers 2, Science and Technology and Their Implications for Peace and Security (United Nations publication, Sales No. E.90.IX.8), p. 7.

Annex

DRAFT GUIDELINES

1. International transfer of high-technology products, services and know-how is essential for the economic and social development of all nations. It must also take into account legitimate requirements for the maintenance of international peace and security.

2. The growing possibility that sensitive technology products, services and know-how may be used for weapons of mass destruction makes it a priority to establish reliable and acceptable criteria to regulate international transfers in those areas, taking into account the right of all States to access to high technology for peaceful purposes.

3. Enhanced international cooperation in the area of science and technology strengthens confidence among States.

4. The existence of disparities of treatment in this area and the differing degrees of access to high technology may result in a deterioration of confidence among countries.

5. Efforts to maintain peace and security are strengthened more through the adoption of internationally accepted norms regarding the transfer of sensitive technologies than through concentrating high technology know-how in a handful of countries or through the practice of one-sided measures restricting such transfers.

6. Because sensitive technologies can be used both for peaceful purposes and for weapons of mass destruction, they cannot be defined as inherently harmful. It is in the intent or purpose underlying their utilization that such technologies may or may not have security implications.

7. A system of international controls over flows of sensitive technology products, services and know-how should be seen essentially as of a monitoring nature, and not as a mechanism for the restriction of legitimate transfers.

8. In establishing a balanced regulation of those transfers, it is necessary to avoid adverse effects on legitimate trade or restrictions on the use of those products, services and know-how for peaceful purposes. Otherwise, regulations would favour collateral transactions and would thus lose effectiveness.

9. The effectiveness of whatever norms and criteria may be adopted is largely contingent on their universal acceptability. It seems necessary to seek the adherence of the greatest possible number of States both on the side of supply and on that of demand. Effectiveness also depends on operational transparency, on the predictability of the rules to be applied and on the possibility of ensuring verification.

10. By virtue of its universal nature, its responsibility in the field of disarmament and its primary duties in promoting peace and security as well as economic, social, scientific and technological development, the United Nations is an appropriate forum for the consideration of this issue.

11. With a view to laying the groundwork for a multilateral approach to international transfer in sensitive technology products, services and know-how the United Nations should prepare and maintain an inventory, as complete and updated as possible, of restrictions affecting such transfers. To that end, States should cooperate in conveying to the United Nations descriptive information on arrangements, laws and guidelines they apply in the regulation of these transfers.

12. The international community must make every effort to develop universal mechanisms for regulating these transfers, in accordance with the Charter of the United Nations and taking into account the requirementss for the maintenance of international peace and security and for the economic and social development of nations.

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OBJECTIVE INFORMATION ON MILITARY MATTERS

Letter dated 25 April 1991 from the head of the Chinese delegation addressed to the Chairman of the Disarmament Commission

I have the honour to transmit to you a working paper entitled China's Basic Position on Objective Information on Military Matters. The Chinese text and its English translation are enclosed herewith.

I would be grateful if you could kindly arrange to have this text circulated as a working paper of the Disarmament Commission under item 4 on the agenda of this session.

(Signed) Hou Zhitong
Head of the Chinese delegation
to the 1991 session of
the Disarmament Commission

Annex

OBJECTIVE INFORMATION ON MILITARY MATTERS

China's basic position on objective information on military matters

Working paper submitted by China

I. Objective

The exchange, as appropriate, of objective information on military matters among States Members of the United Nations in the light of their specific circumstances is conducive to greater openness and transparency, enhanced mutual trust, and the relaxation of tensions, thus contributing to the promotion of disarmament and the strengthening of peace and security.

II. Principles

1. In order to promote the exchange of objective information on military matters and increase openness and transparency, States should strictly abide by the Charter of the United Nations and the Five Principles of mutual respect for each other's sovereignty and territorial integrity, mutual non-agression, non-interference in each other's internal affairs, equality and mutual benefit, and peaceful coexistence, and oppose and eliminate the use or threat of use of force in international relations.

2. It is imperative that the exchange of objective information on military matters be based on the principle of undiminished security for all States.

3. As States vary in their military strength and policy, their impact on the security of other countries and regions is not the same. At the international level, States with the largest and most sophisticated nuclear and conventional arsenals and the military alliance have the obligation to take the lead in making public information concerning their military matters, and under the current circumstances should start with publicizing information on their offensive military forces, such as their long-range fighting capable naval and air forces. They should also enhance the sense of security of other countries and regions by halting their arms race and drastically reducing their armaments, thereby promoting international peace and security.

4. States can formulate through consultations at their own initiative practicable measures on the exchange of an openness and transparency in objective information on military matters in the light of their specific situations and political, military and security conditions. There is no universally applicable formula in this regard.

5. The exchange of and openness and transparency in objective information on military matters should be carried out in conjunction with the bilateral, subregional or regional and multilateral efforts in strengthening security, building confidence and disarmament.

III. Scope

1. The scope of the exchange of and openness and transparency in objective information on military matters should be defined in accordance with the above principles through consultations on an equal footing by parties concerned and can be adjusted, as necessary, upon their agreement.

2. States can, upon the establishment of basic political trust and normal State relations and in line with their own national and regional conditions and needs, formulate through consultations bilateral confidence-building measures in the military sphere, such as to refrain from any military exercise directed against each other along the border, limit the scale, frequency and geographical scope of military exercises at border areas, inform each other of the scale, frequency and geographical scope of military exercises and major troop movements in border areas, invite each other to observe military exercises, exchange annual plans on relevant military activities, agree upon areas free from military exercises. These measures may create conditions for possible further regional arrangements.

IV. Role of the United Nations

1. The United Nations may examine and formulate by consensus guidelines and recommendations concerning the exchange of and openness and transparency in objective information on military matters.

2. The United Nations, without prejudice to bilateral, subregional or regional, and multilateral efforts, may encourage and promote the exchange of and openness and transparency in objective information on military matters, including data collection and dissemination and provision of advisory services.

3. United Nations Regional Centres for Peace and Disarmament may, with the support of States of the region, discuss and study the exchange of and openness and transparency in objective information on military matters, and explore specific measures suitable to their regional characteristics.

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Letter dated 24 April 1991 from the Permanent Mission of India to the United Nations addressed to the Secretary of the Disarmament Commission

I have the honour, on behalf of the Indian delegation, to submit a paper entitled "The role of science and technology in the context of international security, disarmament and other related fields", an item under consideration in Working Group IV at the current session of the Disarmament Commission.

I request that you have this paper circulated as a document of the Disarmament Commission.

(Signed) I. S. CHADHA
Ambassador

Annex

THE ROLE OF SCIENCE AND TECHNOLOGY IN THE CONTEXT OF INTERNATIONAL SECURITY, DISARMAMENT AND OTHER RELATED FIELDS

Scientific and technological developments and their impact on international security

Working paper submitted by India

1. Ours is the age of the advanced scientific-technological revolution. Science and technology has brought profound changes in the economic, social and cultural life of society and has fundamentally transformed international relations. However, science and technology possesses a double-edged nature and can be made to work for good or for evil. On the one hand, as a highly creative force, science and technology has become a cardinal variable for human development, well-being and progress. On the other hand, we are increasingly experiencing the negative side effects of this revolution. These range from the threat to human life by the ever-growing lethality of modern weapons, especially doomsday nuclear arms, to the pollution of air and water and environmental degradation. The use of science and technology for military purposes and the accumulation of weapons of mass destruction amount to the perversion of science. Such use contradicts the basic aim of science and technology: the betterment of the human condition.

2. The central factor differentiating the current age from the one we are entering in the twenty-first century is, and will increasingly become, the determining role that science and technology plays in all aspects of our lives. The new globalism imposed by the pressure of technology matches, of course, the globalization of problems which are susceptible to solution only through collective, global endeavour. Technology is the motivating power of the modern age and in the matter of security areas, it is the key determinant. It is clear that the suspicion and hostile motivation generated by a fragmented world order that has fuelled the arms race and created adversarial stances and military doctrines, can finally be laid to rest in a peaceful and non-violent world order that destroys once and for all the seeds of conflicts. The confrontation can be resolved by returning to the inspiration which has formed the basic principle of the Charter of the United Nations. The programme of action for a global dialogue proposed by India at the third special session of the General Assembly devoted to disarmament with a view to ushering in a nuclear-weapon-free and non-violent world order and unwinding of the various manifestations of the arms race was an attempt in this direction. It takes into account the security concerns of all States. At one level we need to build confidence and trust; and at another to develop new institutional mechanisms to cater to the imperatives of the technological age. The idea of a multilateral verification body under the guidance of the United Nations has to be seen in this context as a support to efforts to take scientific and technological developments from under the shroud of military

secrecy. There is thus a need to sensitize all decision makers to the contradiction inherent in the logic of collective security in the emerging world, which demands the removal of unpleasant technological surprises and the containment of its negative potential on the one hand, and the ethos of military secrecy that currently perpetuates polarization and insecurity rather than generating collective purpose, on the other. The choice is clear. Humanity can either master its destiny through strengthening the collective approach or undermine its future through division. Technology can serve either end. The development in relations between major post-war adversaries are in the direction of halting and overcoming rifts that have plagued us in the past. This favourable political evolution has to be accompanied by positive efforts to harness, to the benefit of all, science and technology, the single most important propellent in the times before us. The process of moving from actual and potential destabilizing fragmentation to an integrative globalization with an enlightened notion of collective security requires conscientious debate and management.

3. The starkest reflection of the dichotomy between the emerging logic of globalism and that of a fragmented world is the phenomenon of the arms race. The arms race has been the antithesis of the search for collective security; and science and technology - which should have provided the means for overcoming poverty and disease and which can be a creative unifying force - has increasingly been devoted to military purposes. The fact that a large proportion of resources, both material and human, are spent on military research and development requires no repetition. Equally harmful to the security environment has been the relationship between security doctrines and the development of new weaponry propelled by technological advance. Allied with this is the vast reach of the scientific-bureaucratic-military industrial complex with its dependence on the arms race. These are formidable forces that proponents of the new vision have to contend with; and in accelerating this outcome, the re-evaluation of the role played by science and technology in the security environment of the future and in developing enlightened security doctrines would be a central factor.

4. Paragraph 39 of the Final Document of the Tenth Special Session of the General Assembly, the first special session devoted to disarmament (General Assembly resolution S-10/2), contains the following provision:

> "Qualitative and quantitative disarmament measures are both important for halting the arms race. Efforts to that end must include negotiations on the limitation and cessation of the qualitative improvement of armaments, especially weapons of mass destruction and the development of new means of warfare so that ultimately scientific and technological achievements can be used solely for peaceful purposes."

5. More than 12 years after the adoption of the Final Document, efforts for "arms control" in both bilateral and multilateral forums have focused primarily on the quantitative expansion of arsenals. At no stage have the qualitative aspects of the arms race been addressed, even though it has been known for some time now that a very large part of the huge sums currently

spent on armament by the major Powers is devoted to making qualitative improvements in the existing weapon systems and in developing new systems. As a matter of fact, most of the nuclear "arms control" agreements provide for the upgrading of the existing weapon systems and specify "permitted" areas for further improvement of weapons. Even the INF Treaty has left the loophole permitting the military use of the fissionable material which will be made available as a consequence of the destruction of the delivery vehicles. Non-ballistic cruise missiles of the same range as those being destroyed under the INF Treaty are now being deployed from sea-based platforms. The scale of expenditure on military research and development and the pace of technical change in the military sector are unprecedented historically. This is the result of the emergence in the post-Second World War period of a large number of industrial and research establishments devoted exclusively to the design, production and refinement of new weapon systems. Such systems are often developed without reference to the political climate or even the prevailing security doctrines. Quite often, this takes place without reference even to the actual weapons developed by the adversary. The history of weapons development in the post-Second World War period is replete with examples of such a self-propelled momentum overtaking whatever meagre results "arms control" measures may have achieved.

Components of the qualitative arms race

6. Today, the world stands on the threshold of a new arms race. A number of technologies that have the potential to transform completely the methods of war-fighting and the nature of warfare are in advanced stages of development. The maturity and application of these technologies would have far-reaching implications for international security and would be a major set-back to efforts for disarmament. The following are some of the areas in which new and emerging technologies with far-reaching military applications are taking shape:

(a) Nuclear weapons: The first-generation nuclear weapons are based on fission, the second generation on fusion. The second-generation weapons designs have increased the sophistication and improved the yield-to-weight ratio of nuclear warheads. The central feature of the third-generation nuclear weapons is the ability to pick and choose specific effects of nuclear weapons and enhance them, while suppressing the unwanted ones. The neutron bomb, or the enhanced radiation weapon, is the precursor of third-generation nuclear weapons. A number of designs of such weapons are being actively explored. These include X-ray laser, in which the energy of the nuclear explosion is channelled into focused beams of intense X-ray radiation. The gamma ray laser, microwave weapons and nuclear devices that can generate powerful electromagnetic pulses are other third-generation concepts that are being explored. Concurrently, more accurate and precise modes of delivery of nuclear warheads are being developed to avoid the large collateral damage, inevitable in less accurate delivery. The manoeuvrable re-entry vehicle (MARV) and the Earth/ice penetrators are technologies that are likely to increase dramatically the ability to deliver nuclear weapons with pinpoint accuracy. New directions in the use of nuclear energy for military purposes are also evident. Plans to deploy compact and powerful nuclear reactors in

space are in advanced stages of development. The new military space missions for reactors include the powering of beam weapons, battle stations and supporting satellites. In the field of ballistic missile defence, the specific weapons being developed include the Directed Energy Weapons (DEWs), in which the destructive energy itself is directed against the target at the speed of light (consisting either of laser or of particle beams) and the kinetic energy weapons (KEWs), which derive their destructive energy from the momentum of propelled objects (this includes electromagnetic rail guns, which can propel objects to very high speeds). The first generation DEWs are already being tested as counter-sensor weapons against precision-guided munitions (PGM) systems, combat-vehicle sensors and reconnaissance, surveillance and target acquisition (RSTA) systems. Successful development and deployment of DEWs may help to preserve the combat efficiency of large combat vehicles such as surface warships and heavy armour in the face of the rapidly growing threat from guided weapons. The kinetic energy weapons under development are planned to be both space-based and ground-launched and could be employed as nuclear and non-nuclear interceptors designed to destroy enemy missiles and nuclear warheads. Preliminary tests have already been carried out and it is expected that these technologies could mature in the next decade. The Inertial Confinement Fusion Technology (ICFT), a technology intensively studied since the 1970s, would confine micro-explosions (miniaturized hydrogen bombs) of up to 300 kilograms. TNT equivalent in above-ground reactor vessels. The micro-explosions may eventually be helpful for studying exotic weapon phenomena. The design for a "high energy density facility" (HEDF) which would be able to contain explosions of up to 300 tonnes (0.3 kiloton) in a seismologically "quiet" vessel is also being studied.

(b) Electronics, computers and artificial intelligence: The ongoing revolution in electronics and computers is further transforming the nature of warfare. Weapon systems are moving from the "smart" to the "intelligence" phase. Unprecedented capabilities for command, control and intelligence (C^3I) systems required for enhanced war-fighting capabilities are under development. A whole range of surveillance sensors and high-speed automated data-handling systems are being built. Of particular importance is the development of fifth-generation computers and artificial intelligence. Artificial intelligence techniques are likely to be used initially in aiding soldiers in handling enormous amounts of information in a very short time in a complicated environment. Artificial intelligence techniques are also being considered for the development of autonomous vehicles and automated battle management systems. The impact of the new developments in computer hardware and software extend to nuclear war-fighting and strategic defence to conventional warfare.

(c) Superconductivity: Superconductivity is a phenomenon in which materials lose their electrical resistance, resulting in virtually no loss of energy when electricity is transmitted. Large supercomputers would overcome problems of overheating and play an important role in future command, control and communication systems. New materials have opened up possibilities for high temperature superconductivity that will maintain growth rates of computer capability well into the next century. This would lead to improvements in

computer and satellites and would allow greater information collection and storage, which will aid battle management considerably.

(d) Information system: A sizeable part of the spiralling cost of weaponry and counter-weapons is known to be due to the information systems. Complex innovations in communication sensor decoy systems have become increasingly integrated with more select presentation of information using advanced graphics. Information technology continues to play a vital role in the modernization of a new generation of weapons.

(e) Conventional weapons: The advances in weapon technology have already led to the conceptualization of strategic warfare without nuclear weapons. The use of ICBMs is being contemplated with conventional weapons. New types of delivery systems, such as transatmospheric vehicles and space planes capable of speeds ranging from 5 to 30 times the speed of sound and large payload capabilities are being developed. These vehicles can operate in the atmosphere and space and can negotiate intercontinental distances in 10 to 15 minutes. The space planes capable of horizontal take off from and landing at normal airfields, lend themselves to greater flexibility in utilizing near-Earth space for military purposes and in carrying out a variety of offensive missions in a short span of time. Reconnaissance, surveillance and target acquisition (RSTA) has become important in devising ways to attack armoured concentrations, warships and aircraft with great efficiency. In theory precision guided munitions (PGMs) could destroy the full range of ground, air and sea-based targets. The economic costs of PGM/RSTA systems are extremely heavy.

(f) Materials technology: Materials technology is a crucial area in the military applications of new technologies. In the construction of weapons, new materials will allow aircrafts to fly faster, ships to stay longer at sea and submarines to range further. Reduced size for performance will reduce the detectability. Jet engines that can operate at higher temperatures will introduce greater efficiency and thrust. New combat power will become available for weapon-guided control and processing. New sensors will make possible the detection of enemy by day and night. In space, the new materials will use yet greater improvement. Indeed it has been the need to develop materials to cope with the heat on re-entry into the Earth's atmosphere that has prompted much of the research. The reduction of weight, increase of strength and increase in engine performance might eventally blur the distinction between air and space. It would help in the construction of "low observables" or "stealth" aircraft for surveillance and attack purposes. These systems once again are likely to be extremely expensive.

(g) Space technology: Space will occupy a greater role in future military operations. Space-based platforms will provide important support to RSTA, navigation and communications. By the turn of the century, sensor technology may have matured enough to provide coverage of mobile, air, ground and sea movements which would be of invaluable help in targeting long-range missile systems. Satellite navigation may also make long-range PGMs affordable by reducing the cost of their guidance systems. Because of this

development, the importance of mobile or hidden targets, or what are designed as strategically relocatable targets (SRTs), will increase. Space to Earth weapons could include beam weapons, orbiting nuclear and conventional armed re-entry vehicles (RVs) and electromagnetic pulse (EMP) generators.

(h) Chemical and biological weapons: The past few years have seen an enormous explosion in mankind's knowledge of the molecular and cellular processes of life. There is also the emerging ability to manipulate these processes through genetic engineering and biotechnology. If these abilities are tapped for military purposes, there could be a new race to develop weapons for chemical and biological warfare. Binary chemical weapons have also been developed wherein two chemicals are converted into super-toxic nerve gases, once the projectile is fired. This technological innovation has removed barriers such as difficulty in storage and transportation which had worked against the production and deployment of new technology chemical weapons. Ecological hazards caused by the release of genetically engineered organisms into the environment, genetic manipulation and human cloning and further development of biological and toxin warfare agents are among some of the persistent concerns associated with biotechnology. The use of accumulated knowledge of biotechnology for deadly purposes affecting humans, animals and crops would be an ultimate disaster.

7. The developments described above have far-reaching implications for the defence strategy of various countries. While qualitative improvement in the military fighting equipment has steadily taken place, there is reason to believe that in view of rapid advances in technology, particularly in informatics and communication technology, we may witness a revolution in warefare driven by modern technology. If allowed to proceed unchecked, these advances would bring about radical changes in the means of war fighting and in security doctrines. The systematic deployment of new categories of high technology weapons may create an entirely new military operational environment that could seriously undermine the security of those nations which are not equipped with advanced weapons.

Implications of the new arms race

8. The qualitative arms race and the development of the new weapon systems have important implications. These include the following:

(a) They carry a much greater risk in case of outbreak of war, particularly nuclear war. Many weapons already operate in a semi-automated or fully automated mode. Automation of entire weapon systems, however, would result in a quantum leap in the dangers. The risk of war as a result of an accident or misjudgment would be much greater.

(b) Furthermore, most of the new weapons systems are offence-dominated. Even the defensive ones have the effect of making offensive strikes possible with greater impunity. Together with the immensely increased accuracy and lethality of these weapons, this is likely to increase the incentive of pre-emptive strikes. This could lead to a renewed arms race in both offensive

arms and in building defences and could introduce these weapons into outer space, which has so far remained free from them.

(c) Moreover, a reasonably accurate assessment of the capabilities of new weapon systems, force levels, force targets and force postures and deployment is going to be extremely difficult in a period of rapid technological change. There would, therefore, be a tendency to proceed on the basis of "worst-case" scenarios, which would result in an increase in the instability of the security environment.

(d) Discrete and selective deployment of tailored nuclear weapons with little collateral effect may tend to increase their perceived utility and hence, their usability. The non-nuclear nature of the powerful new weaponry may tend to make it more acceptable morally and politically.

(e) The distinctions between tactical and strategic weapons and conventional and non-conventional weapons would become blurred, leading to the erosion of thresholds. These new trends have complicated the problem of monitoring and verification of emerging weapon systems. Many of these systems will be smaller in size, more mobile and flexible. In fact, we may have already come to the point of no return in this regard.

(f) New weapon capabilities are likely to be available only to a few States and their allies, providing them with hegemonistic capabilities and increasing their predisposition to engage in coercive diplomacy.

(g) The new technologies pose a serious threat to the existing arms control and disarmament agreements by offering technological and strategic incentives to nations for breaking out of the current restrictions. They would also introduce new complexities which may make further agreements difficult.

(h) Security cannot be viewed purely in military terms. Military spending reduces productivity in two ways - first through misallocation of resources; and secondly, by denying the civilian sector resources for long-term investment on which productivity critically depends. The effect of huge military spending in the militarily significant States largely determines the health of the global economy and frequently sends down convulsions in the third world. The developing countries are doubly affected - first through the direct adverse effect of the military expenditure that they themselves incur to keep pace with technological developments in the military field for their own security; and secondly, through the adverse effect on the global economy of the military expenditures of the high military spenders.

Suggestions for action

9. The real challenge in the field of disarmament is to devise arrangements for controlling the new arms race. To distinguish technology as constructive or destructive is a complex task. Nor is it easy to make a sharp distinction between research and development or testing for development. In the context

of a comprehensive disarmament programme, seeking to eliminate weapons of mass destruction and reducing conventional armaments to the minimum needed for defence, the efforts to control the qualitative arms race would be of great significance and indeed necessary. It may be worthwhile to recall that as far back as 1962, successive United States and Soviet draft proposals on a treaty on general and complete disarmament provided for control on the conversion of military research and development for peaceful civilian purposes. These proposals provided for the establishment of an International Disarmament Organization (IDO) within the framework of the United Nations which would (a) collect reports from the parties to the treaty on any basic scientific discovery and any technological invention having potential military significance, and (b) work out on the recommendation of the expert study groups, concrete arrangements for verification by the IDO that such discoveries and inventions were not utilized for military purposes. It is the right of the public to have access to information at the global level on issues of life and death. While increased public awareness will put a measure of restraint on these developments, it is also the duty of the world scientific community to be alert in this regard to anticipate developments and to make the world aware of their implications. The following suggestions are, therefore, put forward for achieving greater transparency and understanding in this critical and sensitive area:

(a) Technology assessment and forecasting panel: The Secretary-General should have at his disposal a technology assessment and forecasting panel consisting of a small group of eminent scientists and strategists. The task of the panel would be to identify and monitor those developments in the field of new and emerging technologies which have military applications, assess their likely impact on international security and make projections based on such monitoring and assessment. The Secretary-General should consult this group from time to time. On the basis of such consultations and periodic reports to be submitted by the group, the Secretary-General should disseminate their assessment and forecasting on a wider basis, through various means including reports to the General Assembly, the Security Council and the Conference on Disarmament.

(b) National panels of experts: Member Governments should make more or less similar arrangements at the national level. They should constitute panels of scientists which should report periodically to the Government and should be available for consultations from time to time. They should widely disseminate the information and assessment provided by the panel. The Governments, in turn, should submit an annual report to the Secretary-General. The Conference on Disarmament should also impress upon all member Governments that whenever an emerging technology appears to have the potentiality of leading to the development of new weapons and new means of waging war, the details of such technologies should be given wide publicity.

(c) Unit in the Department for Disarmament Affairs: A unit should be established in the Department for Disarmament Affairs to monitor and study the implications of new technologies with potential military applications. The Secretary-General's panel should be able to draw upon the information and study compiled by the unit.

(d) New technology projects and technology missions: There should be greater international cooperation in the field of research in new and emerging technologies with a view to developing them for peaceful purposes. To this end, new technology projects and new technological missions should be undertaken under the aegis of the United Nations. This will result in avoiding duplication of efforts in this high-cost area, fostering trust and promoting global progress and stability.

(e) Banning of technological missions clearly designed for developing new weapons: Negotiations should also start to ban those technological missions which are clearly designed for the development of new weapons and means of warfare.

(f) Guidelines in respect of new technologies with potential military applications: Guidelines should be drawn up under the aegis of the United Nations in respect of new technologies with potential military applications. To begin with, the guidelines could be voluntary in nature. They should be observed by Governments directly responsible for carrying out military research and development and also be recommended for observance by private laboratories and research institutions. Emphasis in the guidelines should be on the transparency, the widest possible dissemination of information nationally and internationally, consultations with and reports to national authorities and the United Nations. They should also include such regulatory measures as may be found feasible. The Secretary-General should set up a group of experts for evolving such a set of guidelines.

Technology transfer and development

10. Technology has a universal character and is a key factor for the progress of mankind. All countries have the right to benefit from advances in science and technology which is the common heritage of mankind. Owing to a variety of reasons so far, the distribution pattern of technology has been unfavourable to developing countries. During the 1980s while the developed countries spent between 2 and 2.5 per cent of their GNP on research and development, the developing countries were able to spend less than 0.2 per cent of their GNP for the same purpose. The development of new and ongoing technologies requires fairly large financial resources, and developing countries may be left out from promising areas such as modern biotechnology, materials technology and micro-electronics. It would be necessary for all developing countries to have better access to these technologies and their transfer should take place under favourable terms and conditions. Since the beginning of the 1980s, the slow-down of technology flows to the developing countries, compounded by the new challenges brought about by technological change, is a matter of great concern. The domination of commercial transactions in the transfer process and reverse transfer of technology (brain drain) has cancelled out the advantages enjoyed by traditional production in developing countries. Apart from limiting technological diffusion or upgrading, there has been a tendency to obstruct developing countries' access to state-of-the-art technology, especially in those areas considered crucial by developing countries for trade and development and in relation to high technology and new and emerging technologies.

11. The establishment of uniform and higher standards of intellectual property rights protection and enforcement, restriction of performance requirements on foreign investment and opening up of developing countries' services sectors before they are on a competitive level would have negative implications for the transfer to and development of technology in these countries. The situation is further exacerbated by the impasse reached in the completion of other international instruments, such as the international code of conduct on the transfer of technology and the Revisions of the Paris Convention for the Protection of Industrial Property, aimed at encouraging the flow of technology to developing countries and at enabling them to reduce the technological gap.

12. The trade and technology policies followed by developed countries should assure unhindered access of developing countries to critical, high, new and emerging and state-of-the-art technology. It would be desirable that cooperation arrangements on joint research and development on these technologies be established, encouraged and enhanced, in agreed areas, between developing and developed countries, as well as among developing countries.

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PROCESS OF NUCLEAR DISARMAMENT IN THE FRAMEWORK OF INTERNATIONAL PEACE AND SECURITY, WITH THE OBJECTIVE OF THE ELIMINATION OF NUCLEAR WEAPONS

Working paper submitted by Argentina

1. Dealing with a question such as the "Process of nuclear disarmament in the framework of international peace and security, with the objective of the elimination of nuclear weapons", as with all other questions which have so direct a bearing on global security, requires all States to make efforts to help strengthen international peace and security.

2. The improved international climate created the conditions for the negotiation of bilateral agreements on nuclear disarmament between the United States and the Soviet Union, a process which culminated successfully in the Treaty on Intermediate-Range Nuclear Missiles. The agreement on conventional forces in Europe is another tangible sign of an international situation which must be encouraged and nurtured.

3. The facts also show how much remains to be done in this field and in the quest for a harmonious world order. The recent military conflict and the potential for the use of weapons of mass destruction in that conflict have served to underscore the fact that theories about the use of such weapons are by no means mere abstractions, as long as the relevant multilateral instruments do not exist.

4. It is incumbent on all States to seek, by all appropriate means at their disposal, ways of reducing the likelihood of scenarios of conventional confrontation escalating to the use of weapons of mass destruction, including nuclear weapons.

5. In this context, it seems that thought needs to be given to the possibility of establishing multilateral nuclear warning and crisis control centres.

6. The establishment of centres of this kind would offer an effective means of prevention, which would help to establish the conditions of predictability and stability that are becoming increasingly necessary in the changing global strategic context in which we are living in this final decade of the twentieth century.

7. It would, moreover, make it possible to involve the various States in a practical and tangible way in the undertaking of exchanging information and maintaining adequate channels of communication for responding to unexpected situations, thereby avoiding in every case the spread of conflicts and situations which could trigger the use of nuclear weapons or other weapons of mass destruction.

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REGIONAL APPROACH TO DISARMAMENT WITHIN THE CONTEXT OF GLOBAL SECURITY

Working paper submitted by the Union of Soviet Socialist Republics

1. Regional disarmament measures can effectively help reduce the risk of local conflicts and strengthen the process of confidence-building and gradual removal of the causes of instability in individual regions. Such measures form a component of the general process of disarmament, and must be viewed in the context of global security. The relationship between regional and global security is determined inter alia by the fact that the strengthening of stability and the disarmament process in one region must not lead to disruption of the balance of forces in other regions, particularly as a result of export of arms from the region where the reduction takes place.

2. Regional measures must cover all forms of arms limitation and disarmament. They could include issues of nuclear and conventional weapons, naval forces, the international arms trade, the non-proliferation of nuclear and chemical weapons, military missiles and missile technology, defence doctrines and the reduction of military presence abroad. The priority of any given regional measures is determined by the actual conditions in each of the regions.

3. The regional approach to disarmament must be implemented in the light of the specifics of each region and with the participation of all parties concerned. Its objective is the attainment of the lowest possible level of armaments while respecting the principle of non-impairment of anybody's security and the assumption by the parties in this process of multilateral political, military, economic and other obligations.

4. Confidence-building measures in the political, military and other spheres could be a prerequisite for the activation of regional disarmament. Depending on local conditions, the confidence-building process may initially be developed on a bilateral basis, the non-military sphere as well, gradually evolving into security measures covering broader and broader areas, and at certain stages, by agreement between the regional States concerned, would take the form of appropriate disarmament agreements.

In this context, great importance attaches to utilization of the experience of individual regions, particularly Europe, where great progress has been achieved in the implementation of such measures.

5. The United Nations can stimulate the disarmament process at the regional level, serve as a centre for compilation of the necessary information and its submission to interested parties, and also render them consultative services and discharge other intermediary functions.

At this stage, the Disarmament Commission should define the interrelationship between regional and global security, draw up general recommendations regarding regional disarmament measures applicable to individual regions, in the first place for regions of heightened tension, and, in concrete terms, discuss a model set of elements of a regional security structure which would include, in particular: limitation of military potentials to levels agreed upon between the participants in the structure; abstention from the development, production, acquisition and deployment of all forms of mass destruction and modern means of delivering them; limitation of the supply to other regions and acquisition of conventional weapons, particularly the most destabilizing forms of offensive weapons; development of systems of measures for increasing trust, openness and predictability in the military sphere; and establishment of regional centres for reducing the threat of war and preventing conflicts. Such measures must of course be implemented on the initiative and with the consent of all States of the region concerned, taking into account the specific security requirements of that region. Of particular current interest is the search for lines of a system of agreements on the limitation of trade in weapons in individual regions and on the prevention of the proliferation of nuclear and chemical weapons and certain forms of military missiles and missile technology. The Commission could indicate possible directions for United Nations participation in regional disarmament in association with United Nations peace-keeping operations in individual regions.

The process of arms limitation and disarmament at the regional level must be accompanied by verification measures. The United Nations could assume responsibility for implementing verification functions.

The permanent members of the Security Council could act as guarantors of regional agreements.

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THE ROLE OF SCIENCE AND TECHNOLOGY IN THE CONTEXT OF INTERNATIONAL SECURITY, DISARMAMENT AND OTHER RELATED FIELDS

Letter dated 25 April 1991 from the head of the Chinese delegation addressed to the Chairman of the Disarmament Commission

I have the honour to transmit to you a Working Paper entitled "China's principled position on the role of science and technology in the context of international security, disarmament and other related fields". The Chinese text and its English translation are enclosed herewith.

I would be grateful if you could kindly arrange to have this text circulated as a document of the Disarmament Commission under item 7 on the agenda of this session.

(Signed) Hou Zhitong
Head of the Chinese delegation
to the 1991 session
of the Disarmament Commission

Annex

THE ROLE OF SCIENCE AND TECHNOLOGY IN THE CONTEXT OF INTERNATIONAL SECURITY, DISARMAMENT AND OTHER RELATED FIELDS

China's principled position on the role of science and technology in the context of international security, disarmament and other related fields

Working paper submitted by China

1. Scientific and technological achievements, as the common wealth of mankind, should be used to benefit mankind, promote economic and social development of all countries, and safeguard international peace and security.

2. Rapid advancement in modern science and technology has continued to create enormous material wealth for mankind and improve people's quality of life. However, the qualitative arms race based on high-tech has engulfed large amounts of human, material and financial resources which could otherwise have been used for economic and social development, thus seriously jeopardizing world peace and security.

3. The countries possessing the strongest military-related scientific and technological capacity and the largest military arsenals have devoted large amounts of financial resources to the research and development of military applications of science and technology and to military industry. They bear a special responsibility for halting the arms race in, inter alia, weapons of mass destruction and new weapon systems and should take the lead in adopting effective measures.

4. The sole purpose of military applications of science and technology should be to strengthen the necessary capability of self-defence. They should not be used for military intervention or aggression against other countries.

5. In view of the role of science and technology in the verification of arms control and disarmament and the disparity among different countries in the availability of scientific and technological verification means, technology sharing and extensive international exchanges and cooperation in this area should be carried out, so as to contribute to confidence-building among countries and international security and stability.

6. Measures on the restriction or control of military applications of science and technology should not jeopardize the development of science and technology for civilian purposes in various countries as well as international scientific and technological cooperation.

7. To check the arms race, particularly the qualitative arms race, realize nuclear and conventional disarmament, and prohibit space weapons and

chemical, biological and other weapons of mass destruction is the fundamental way to prevent the use of science and technology for destructive purposes and for the promotion of international security.

8. In view of the dual applicability nature, in many cases, of science and technology for both military and civilian purposes, efforts should be made to follow in a timely manner the character and direction of the latest various developments of science and technology, formulate a set of realistic and practical standards and guidelines for the technical assessment of emerging science and technology which may have possible military uses, so as to increase public understanding of the role of science and technology in the context of international security, disarmament and other related fields and encourage all countries to appropriately restrict the military applications of science and technology. In this regard, the United Nations has an import role to play.

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REGIONAL APPROACH TO DISARMAMENT WITHIN THE CONTEXT OF GLOBAL SECURITY

Working paper submitted by Austria

In the light of the close interrelationship between regional and global dimensions of peace, security, arms control and disarmament questions, it seems possible to start off with identifying principal areas of common understanding, whereby the "Chairman's non-paper" could serve as a guideline. In this context, the following objectives and principles might be taken into consideration with the understanding that experiences gained in one region might not automatically serve as examples for other regions:

- Respect for the principles enshrined in the United Nations Charter and their continuing application in the regional context;

- Responsibility shared by all countries of a given region to contribute to the achievement of durable peace and security in their region;

- Identification of common regional security interests and their possible institutionalization in the form of regional security structures;

- Enhancement of regional security and cooperation on subjects of common interest in the regional context, such as sharing of tasks, prior information on undertakings of a regional dimension, definition of principles of security, distribution of resources, human settlement questions, etc.

- Agreements/arrangements for peaceful settlement of disputes;

- Implementation of confidence-building in the regional context, such as exchange of information, observance of military manoeuvres, etc. and their possible institutionalization on a permanent basis;

- Assurance of verifiability and reliability of any information provided for under regional forms of exchange of information;

- Financial and economic implications of regional confidence- and security-building for the respective region as a whole;

- Confidence- and security-building among different regions, based on the principle of non-interference in internal affairs;

- Comprehensive approach to security also in the regional context, e.g. prosperity, development, political stability and the protection of the environment.